
FILE 'USPAT' ENTERED AT 10:45:27 ON 12 FEB 1998

* W E L C O M E T O T H E *
* U . S . P A T E N T T E X T F I L E *

=> set step on

SET COMMAND COMPLETED

=> set high on

SET COMMAND COMPLETED

=> s 451/clas

L1 42905 451/CLAS

=> s (polishing pad) (5a) belt

L2 (24260) POLISHING
L3 (106719) PAD
L4 (679) POLISHING PAD
(POLISHING(W) PAD)
L5 (154418) BELT
L6 7 (POLISHING PAD) (5A) BELT

=> dis l6 1-7 abs

'ABS' IS NOT A VALID FORMAT FOR FILE 'USPAT'
ENTER DISPLAY FORMAT (CIT):ab

US PAT NO: 5,707,492 [IMAGE AVAILABLE] L6: 1 of 7

ABSTRACT:
A chemical-mechanical-polishing (CMP) process in which a metal interconnect material (47) is polished to form a metal plug (48) includes the application of titanium to the surface of a polishing pad (14) of a polishing apparatus (10). Titanium metal is applied to the surface of the polishing pad (14) by either abrasively applying titanium by use of a titanium block (32) attached to a rotating disk (26), or by a titanium body (23, 25) integrated with a carrier ring (23). Alternatively, titanium can be applied by impregnating a felt layer (52) with titanium particles (56), or by adding titanium directly to the polishing slurry (50).

US PAT NO: 5,692,947 [IMAGE AVAILABLE] L6: 2 of 7

ABSTRACT:
A wafer polisher and method for the chemical mechanical planarization of semiconductor wafers. The polisher includes a wafer holder for supporting the semiconductor wafer and a linear polishing assembly having a polishing member positioned to engage the surface of the wafer. The polishing member is movable in a linear direction relative to the wafer surface to uniformly polish the surface of the wafer. A pivotal alignment device may be used to pivotally support one of the wafer holder and the polishing member relative to the other of the wafer holder and the

polishing member with the surface of the wafer and the polishing member retained in parallel alignment during operation of the polisher. The polisher optionally includes a conditioning station for conditioning the polishing member.

US PAT NO: 5,593,344 [IMAGE AVAILABLE]

L6: 3 of 7

ABSTRACT:

A semi-conductor wafer polishing machine having a polishing pad assembly and a wafer holder includes a support positioned adjacent the polishing pad assembly. This support has at least one fluid inlet connectable to a source of fluid at a higher pressure, at least one fluid outlet connectable to a fluid drain at a lower pressure, and at least one bearing surface over which fluid flows from the source to the drain. The polishing pad is supported by the fluid over the bearing surface for low-friction movement with respect to the support. Similar fluid bearings can be used in the wafer holder. An array of generally parallel grooves is provided on a belt support surface to reduce hydroplaning of a polishing belt. A turbine drive system rotates a wafer chuck in a wafer holder.

US PAT NO: 5,571,044 [IMAGE AVAILABLE]

L6: 4 of 7

ABSTRACT:

A semi-conductor wafer polishing machine having at least one polishing pad assembly and at least one wafer holder positioned to hold a semi-conductor wafer against the polishing pad assembly includes a joint having two axes of rotation intersecting at a center of rotation. A wafer chuck is supported on the joint adjacent the periphery of the chuck to provide higher material removal rates at the center of the wafer than the periphery of the wafer during polishing.

US PAT NO: 5,558,568 [IMAGE AVAILABLE]

L6: 5 of 7

ABSTRACT:

A semi-conductor wafer polishing machine having a polishing pad assembly and a wafer holder includes a support positioned adjacent the polishing pad assembly. The support includes multiple fluid bearings that support the polishing pad assembly on the support. These fluid bearings are arranged concentrically to provide concentric regions of support for the polishing pad assembly, and each fluid bearing is coupled to a respective source of pressurized fluid at a respective pressure.

US PAT NO: 4,651,474 [IMAGE AVAILABLE]

L6: 6 of 7

ABSTRACT:

An endless abrasive belt surface treating apparatus which includes a platen assembly arranged to move in an oscillatory or epicyclic pattern relative to the work surface. The apparatus includes a rotary eccentric crank or drive for drivably oscillating the platen as well as the belt guiding rolls adjacent the platen, with such oscillatory or epicyclic motion being continuously applied while workpieces are being carried through the machine.

US PAT NO: 4,577,364 [IMAGE AVAILABLE]

L6: 7 of 7

ABSTRACT:

A floor cleaning machine including a support frame with a handle attached to the upper end of the support frame for guiding the machine along the floor and a wheel assembly attached to the lower end. A plurality of disc-shaped floor cleaning pads disposed and held adjacent one another such that a floor pad cylinder having a horizontally-disposed longitudinal axis is formed are attached to the lower end of the frame. A motor supported by the frame rotates the floor pads about the axis on the floor in a vertical cleaning motion. A spraying system sprays cleaning fluid downward towards the floor and forward of the rotating cleaning

pads. The dirtied cleaning fluid is then sucked up through a nozzle positioned behind the wafer pad cylinder to a vacuum and holding tank assembly mounted on the frame.

=> dis 16 1-7 cit

1. 5,707,492, Jan. 13, 1998, Metallized pad polishing process; Charles W. Stager, et al., 51/295; 156/345; 216/88; 451/41, 287 [IMAGE AVAILABLE]
2. 5,692,947, Dec. 2, 1997, Linear polisher and method for semiconductor wafer planarization; Homayoun Talieh, et al., 451/41; 125/21; 451/60, 173, 307, 443 [IMAGE AVAILABLE]
3. 5,593,344, Jan. 14, 1997, Wafer polishing machine with fluid bearings and drive systems; David E. Weldon, et al., 451/296, 303, 307 [IMAGE AVAILABLE]
4. 5,571,044, Nov. 5, 1996, Wafer holder for semiconductor wafer polishing machine; Hooman Bolandi, et al., 451/385, 398 [IMAGE AVAILABLE]
5. 5,558,568, Sep. 24, 1996, Wafer polishing machine with fluid bearings; Homayoun Talieh, et al., 451/303, 490 [IMAGE AVAILABLE]
6. 4,651,474, Mar. 24, 1987, Wide belt sanding machine with platen oscillating means; Eugene C. David, 451/300 [IMAGE AVAILABLE]
7. 4,577,364, Mar. 25, 1986, Floor cleaning machine; Peter G. Demetriades, 15/320, 98, 230.14, 230.17, 383 [IMAGE AVAILABLE]